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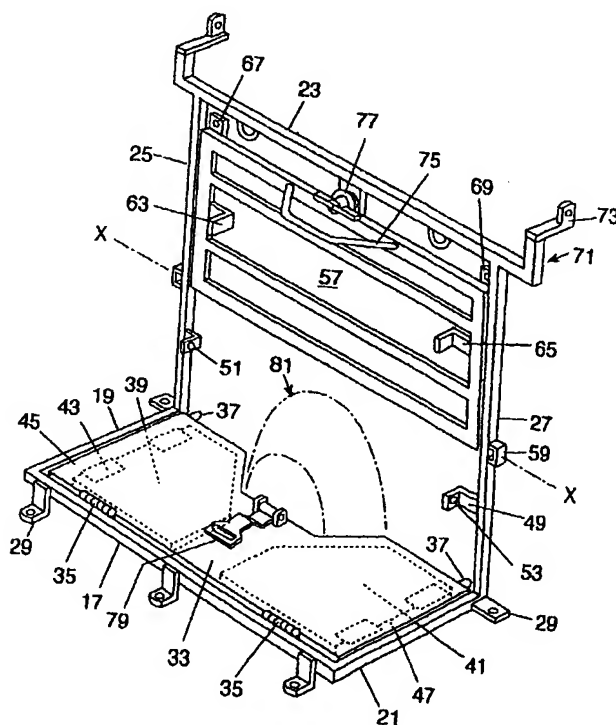
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[Continued on next page]

(54) Title: SECURE STORAGE CHAMBERS



(57) Abstract: A van is provided within its carrying compartment with an installation for use in the providing a safety storage chamber for the safe storage against theft of tradesmen's tools, such, for example, as electric drills. The installation comprises a substantially L-shaped frame, (17, 23, 25, 27) and several panels (33, 39, 41, 57) hinged to the frame for movement between a collapsed, unobtrusive state in which chamber front and side panels are prostrate on, or adjacent to, the compartment floor, and an erect state in which these are able to cooperate with a lid panel also hinged to the frame to create the chamber.

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SECURE STORAGE CHAMBERS

This invention relates to secure storage chambers for fixed installation within a compartment of a mobile vehicle, to kits of parts from which such storage chambers may be assembled, and to mobile vehicles having a vehicle compartment within which such a storage chamber shall have been installed.

The theft of valuable work tools, both mechanical and electro-mechanical, as well as other valuable items of substantial size, from mobile vehicles, notably motor vans, is commonplace, and it is the purpose of the present invention to offer a design for a secure storage chamber, being a chamber of a construction eminently well suited for installation, primarily, within a commodity carrying compartment of a van or other road vehicle.

According to the invention, mobile vehicles, and kits of parts as aforesaid, are as set forth in the claiming clauses, or any of them, accompanying this Application and, accordingly, the content of said claiming clauses and the inter-relationships therebetween are to be regarded, notionally, as being here set forth, also.

A tradesman's van and, more specifically, a kit of parts adapted for assembly such as to constitute a fixed secure storage chamber installation within the carrying compartment thereof, are hereinafter described with reference to the accompanying drawings, in which:

Fig.1 shows a side view of a motor van within which is installed a diagrammatically represented safe storage chamber structure;

Fig.2 shows, pictorially, the structure represented in Fig.1, safe storage chamber wall panels being disjointed and folded to an unobtrusive compact configuration;

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Figs.3 to 5 show, pictorially, the first, second and third steps in the erection of the safe storage chamber from the compact configuration of Fig.2, Fig.5 being shown with part of the lid panel cut-away;

Fig.6 shows the structure with the safe storage chamber in the fully erect configuration; and,

Fig.7 shows the panel supporting frame of the installation.

The installation has a panel supporting frame (Fig.7) which comprises: a frame part 11 having first and second rigid, substantially L-shaped, square cross-section, mild steel, tubular side members 13, 15, suitably of 2.5mm wall thickness, said side members being respectively contained in spaced parallel planes; a frame first cross-member 17 which bridges corresponding first limb portions 19, 21, respectively, of the L-shaped side members 13, 15 at the forward ends thereof; and, a frame second cross-member 23 which bridges corresponding second limb portions 25, 27 of the L-shaped frame side members 13, 15 at the upper ends thereof.

The first limb portions 19, 21, and the first cross-member 17 of the frame, are provided with a multiplicity of lugs 29 having passages adapted to receive bolt connectors (not shown) by means of which the installation, of which the frame 11 is part, is to be secured to the floor (not illustrated) of the vehicle compartment 31 (Fig.1). When so secured, the first limb portions 19, 21, of the frame side members, and frame first cross-member 17 are contained in a horizontal plane, and the second limb portions 25, 27, of said frame side members, and the frame second cross-member 23 are contained in a vertical plane.

Attached to the frame 11, there are, in the example, four panel members. Each of the aforesaid panel members comprises a body of

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flat sheet mild-steel, suitably of 2.5mm gauge, and an endless mild-steel tubular sub-frame of square cross-section identical to that of the side frame members 13, 15, each sub-frame being of a size and shape such as to extend around the periphery of the body of sheet material, the sub-frame and the body being secured together by tack welds at intervals around the sub-frame.

One of the four panel members is a front panel member 33 the bottom member of whose box-section sub-frame is connected by spaced apart hinges 35 to the frame box-section first cross-member 17, the hinges being such as to constrain the front panel member 33 for angular displacement between a first, or collapsed, position (Fig.2) at which the front panel member lies flat parallel with the compartment floor, and a second, or erect, position (Figs.3, 4, and 5), at which the panel member 33 extends, transversely of the vehicle, upright with respect to the compartment floor. The sub-frame of the front panel member has, at its extremities, upstanding posts, as 37.

First and second side panel members 39, 41, have their sub-frames respectively connected, at hinges, as 43, to the sub-frame of the front panel member 33 adjacent to the side edges 45, 47, thereof.

It will be observed (Fig.2), with the front panel member 33 in the collapsed state, the side panel members 39, 41, are such as each to lie with one major surface thereof in face to face contact with the compartment floor, and with the other in supporting face to face contact with the front panel member 33.

Projecting from corresponding major surfaces of the side panels 39, 41, there are two posts (not shown) each provided with a diametral hole towards the free end thereof, and the front

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panel 33 has two passages, as 33', at spaced locations such that with the front and side panel members in the collapsed position shown in Fig.2, the aforesaid posts are respectively received within said passages 33', the free ends of the posts projecting proud of the front surface of the front panel 33. Elongate wire clips (not shown) extend through the passages, the side and front panel members being thereby held for movement as one.

In swinging the front panel member 33 upwardly from the collapsed to the erect position, the side panel members 39, 41, are compelled to follow. The second limb portions 25, 27, of the frame side members 13, 15, have inwardly extending transversely aligned lugs 49, 51, respectively, through which correspondingly located passages, as 53, extend, and the sub-frames of the side panel members 39, 41, carry posts, as 55, the positions of which are such as, when the front panel member 33 is in the upright position, to be able, respectively, to enter the passages 53, the second limb portions 27, 29, of the frame side members 13, 15, thereby serving in the provision of rigid support for the hingedly connected front 33 and side panel members 39, 41.

The fourth panel member is constituted by the lid 57. The lid 57 spans the space between the vertical, second limb portions 25, 27, of the frame side members 13, 15, being supported therebetween for angular displacement about a transverse axis X-----X defined by transversely aligned first and second pivotal bearing arrangements, as 59.

The lid 57 is angularly displaceable about the axis X-----X between the vertical plane (Figs.2 to 5) and the horizontal plane (Fig.6). Projecting outwardly from the underside 61 of the lid 57

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at or adjacent to the side edges thereof, there are first and second lugs 63, 65, respectively, and, projecting from the outer extremities of the upper edge of the lid panel 57, there are apertured lugs 67, 69, respectively.

At the ends of the second cross-member 23, bridging the frame side members 13, 15, there are elbow extension portions, as 71, from which project apertured lugs, as 73, these providing locations at which the second limb portions 25, 27, of the side members 13, 15, of the frame 11 may be secured, at the top, to side walls or other convenient structural parts of the vehicle compartment. Other features which should be mentioned are the lid handle 75, latch means 77 for releasibly holding the lid 57 in the vertical plane, and a strong pad-locking means 79 which is for releasibly coupling the lid 57 and the front panel member 33 and which, in addition, serves as a handle for raising the front and side panel members as one from the collapsed position of Fig.2.

It should be noted, also, that the installation is, in the embodiment, devoid of a rear panel member. The lack of such a panel member arises from the circumstance that, in the example, the frame abuts a bulkhead or analogous wall separating the driver compartment from the compartment in which the frame 11 and the several said panel members are to be found. It will be noted, also, that, in the example, the front and side panel members have cut-away portions, this to accommodate the protrusion created by the rear 79 of the vehicle engine housing.

In other circumstances, of course, a rear panel member might be provided, the latter panel member comprising, in distinction from the front, side and lid panel members, a body of mid-steel sheet material secured, directly, as by tack welds (the rear panel

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member not being angularly displaceable a panel sub-frame would not then be required), to the forward faces of the second limb portions 25, 27, of the frame side members 13, 15. The absence of an engine housing protrusion, as 81, would, of course, avoid the need for cut-aways in the front and side panel members.

The several Figures clearly show the conversion of the structure from a compact form (Fig.2) to the fully erect state (Figs.3 to 5) at which a safe storage chamber emerges.

From the collapsed position (Fig.2), the front 33 and side panel members 39, 41, are to be swung upwardly about the hinge axis of the front panel member. With the front panel member 33 in the vertical plane (Fig.3), the side panel members 39, 41, may be swung outwardly about their parallel hinge axes with the front and side panel members given support by the inter-engagement between the posts 55 and lugs 49.

With the front and side panel members thus supported, the lid panel member 57 is, after being freed from the frame 11, by release of the latch means 77, for angular movement about its pivot axis X---X, brought to contact with the upper rims of the front 33 and side panel members 39, 41, thereby to serve as the upper closure member of the chamber so formed with the posts 37 received within the apertures of the lid panel lugs 67, 69.

As indicated within the cut-away of Fig.5, in the course of bringing the lid panel 57 to the closure position, the lugs 63, 65, projecting from its underside, are brought to positions respectively lying in the paths of angular displacement of the side panel members 39, 41. With the chamber closed, and with the chamber pad-locked, the presence of the lugs 63, 65, secures the chamber against easy unauthorised access to valuables which may b

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held within the chamber, whilst, by folding the several hinged panel members to the positions shown in Fig. 2, the front and side panel members being then flat with respect to the compartment floor, and the lid panel member being supported vertically against the frame 11, the installation is unobtrusive and does not constitute an obstruction in the use of the compartment for work purposes.

It is to be observed that the elbow extension portions 69, 71, project upwardly from the cross-member 23, the frame 11 being thereby provided with a step formation, which may be used to receive one end of lengthy items, such, for example, as a ladder to be transported.

Although not illustrated, the compartment may be provided with a second frame located at the opposite end of the compartment from the frame 11 of the aforescribed installation. The additional frame would be hinged at its lower end to be displaceable between an erect lockable position and a position at which it is in contact with the compartment floor. The additional frame, when erect, would then serve to support the ladder or other lengthy item at its rear end.

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CLAIMS

1. A mobile vehicle having a vehicle compartment within which is an installation, being an installation characterized by a multiplicity of wall panels (33, 39, 41, 57) and means (29, 35, 43, 59) by which the several said wall panels are connected together, the wall panels and said connection means being constructed, arranged, and adapted such that said wall panels may be displaced with respect to one another between a first configuration in which at least certain ones of said wall panels are in a compact relationship with respect to one another, and a second configuration in which all of said wall panels are in an erect configuration, being a configuration in which the several wall panels cooperate with one another in such manner as to constitute a secure storage chamber.
2. A vehicle as claimed in claim 1 characterized in that said installation is such that with said wall panels (33, 39, 41, 57) in said first configuration, side panels (39, 41) of the structure are contained in planes parallel to the vehicle compartment floor.
3. A vehicle as claimed in claim 1 or 2 in which said installation is characterized by:
 - (a) a frame part (11) having:
 - (i) first and second rigid, substantially L-shaped, frame side members (13, 15), respectively contained in spaced parallel planes;
 - (ii) a frame first cross-member (17) which bridges first corresponding limb portions (19, 21,) of said L-shaped side members (13, 15);

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(iii) a frame second cross-member (23) which bridges second corresponding limb portions (25, 27), of said L-shaped side members (13, 15);

(b) means (29) securing said frame rigidly with respect to the vehicle body (31);

(c) a front panel member (33) hingedly connected (35) to said frame first cross-member (17);

(d) first and second side panel members (39, 41) respectively hingedly connected (43) to said front panel member (33) substantially at the edges (45, 47) thereof;

(e) a lid panel member (57) hingedly connected (59) to said second limb portions (25, 27) of said frame side members (13, 15) ; and in which,

(f) the several aforesaid parts of said structure are constructed, arranged and adapted such that the front (33) and side panel members (39, 41) are pivotal between a first configuration in which said front and side wall members are in a compact relationship and a second configuration in which they are fully erect;

(g) said lid panel member (57) is pivotal about the hinge axis defined by its hinge connections (59) with said second limb portions (25, 27) of said frame side members (13, 15) such as, with said fixed rear panel and side wall panels (39, 41) in the erect configuration, to effect closure of the upstanding front and side walls to constitute said security chamber; and,

(h) said lid panel member (57) incorporates means operative, with the lid panel member serving as the closure member of the security chamber, to lock the side panel

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members (13, 15) against movement about their hinge connections with the front panel member (33).

4. A vehicle as claimed in claim 3 characterized in that:
said frame members (13, 15, 17, 19, 21, 23, 25, 27) are each of a box-form construction; said panels members (33, 39, 41, 57) each comprise: a body of sheet material, and, at the periphery of said sheet material body, a box-form endless sub-frame, to which the sheet material of said panel member is rigidly secured; and, said hinge connections are between box-form members, whether of the frame or of the sub-frames.
5. A vehicle as claimed in claim 3 or 4 characterized in that hinge connections between said lid panel member (57) and said second limb portions (25, 27) of said frame side members (13, 15) are at locations intermediate the ends of said limb portions, and at, or in close proximity to, the free ends of said limb portions, there is a cross member integral therewith.
6. A kit of parts characterized in having the several constituent parts thereof adapted and constructed such as to enable said parts to be assembled to constitute an installation in a vehicle, being an installation as specified in any of claims 1 to 5.

AMENDED CLAIMS

[Received by the International Bureau on 12 September 2002 (12.09.02);
original claims 1-6 replaced by amended claims 1-6 (3 pages)]

1. A mobile vehicle having a compartment within which is an installation comprising a plurality of wall members hingedly connected together such as to enable said wall members to be displaced with respect to one another between a first configuration in which at least certain ones of said wall panels are in a compact relationship with respect to one another, and a second configuration in which all of said wall panels are in an erect configuration, being a configuration in which the several wall panels cooperate with one another in such manner as to constitute a storage chamber, characterized in that said installation comprises:
 - (a) a frame part (11) having:
 - (i) first and second rigid, substantially L-shaped, frame side members (13, 15), respectively contained in laterally spaced parallel planes;
 - (ii) a frame first cross-member (17) which bridges first corresponding limb portions (19, 21) of said side members (13, 15);
 - (iii) a frame second cross-member (23) which bridges second corresponding limb portions (25, 27) of said side members (13, 15);
 - (b) means (29) securing said frame (11) rigidly with respect to the vehicle body (31);
 - (c) a front wall panel member (33) hingedly connected (35) to said frame first cross-member (17);
 - (d) first and second side wall panel members (39, 41) respectively hingedly connected (43) to said front wall panel

AMENDED SHEET (ARTICLE 19)

member (33) substantially at the edges (45, 47) thereof;

(e) a lid panel member (57) hingedly connected (59) to said second limb portions (25, 27), of said frame side wall members (13, 15); and in which,

(f) the several aforesaid parts of said structure are constructed, arranged and adapted such that the front (33) and side wall panel members (39, 41) are respectively pivotal between a first configuration in which said front and side wall panel members are in a compact relationship and a second configuration in which they are fully erect;

(g) said lid panel member (57) is pivotal about the hinge axis defined by its hinge connections (59) with said second limb portions (25, 27) of said frame side members (13, 15) such as, with said fixed rear panel and side wall panel members (39, 41) in the erect configuration, to effect closure of the uncapped volume defined by said upstanding front and side wall panel members, thereby to constitute said security chamber; and,

(h) said lid panel member (57) incorporates means operative, with said lid panel member (57) serving as the closure member for said uncapped volume, to lock the side wall panel members (39, 41) against movement about their hinge connections with the front wall panel member (33).

2. A vehicle as claimed in claim 1 characterized in that:

- . the several said members (13, 15, 17, 19, 21, 23, 25, 27) of said frame part (11) are each of tubular form;
- . said panel members each comprise a metal panel part (33, 39, 41, 57) and, extending around a marginal zone of each said

panel part, an endless sub-frame composed of tubular members to which the relevant panel part (33, 39, 41, 57, as the case may be) is substantially irremovably united, as by welding; and,

- . said hinge connections (as 35, 43, 59) are constituted as connections between said tubular members, whether of said frame or of said sub-frames.

3. A vehicle as claimed in claim 3 characterized in that said tubular members are of rectangular cross-section.

4. A vehicle as claimed in claim 1, 2 or 3 characterized in that said installation is such that in said first configuration, said front and side panel members of the structure are contained in planes parallel to the vehicle compartment floor.

5. A vehicle as claimed in any of claims 1 to 4 characterized in that the hinge connection between said lid panel member 57 and said second limb portions (25, 27), of said frame side members (13, 15) are at locations intermediate the ends of said limb portions, and at, or in close proximity to, the free ends of said limb portions, there is a cross member integral therewith.

6. A kit of parts adapted to be assembled such as to constitute a secure storage chamber for installation within a compartment of a mobile vehicle, being a kit of parts as claimed in any of claims 1 to 4.

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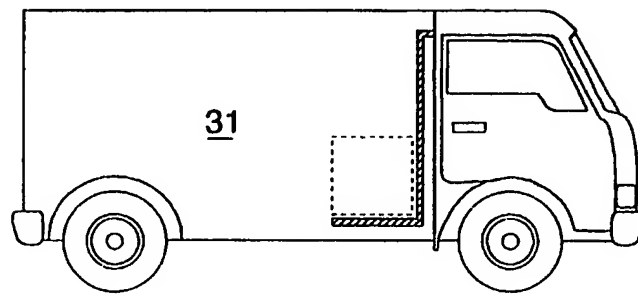


Fig 1

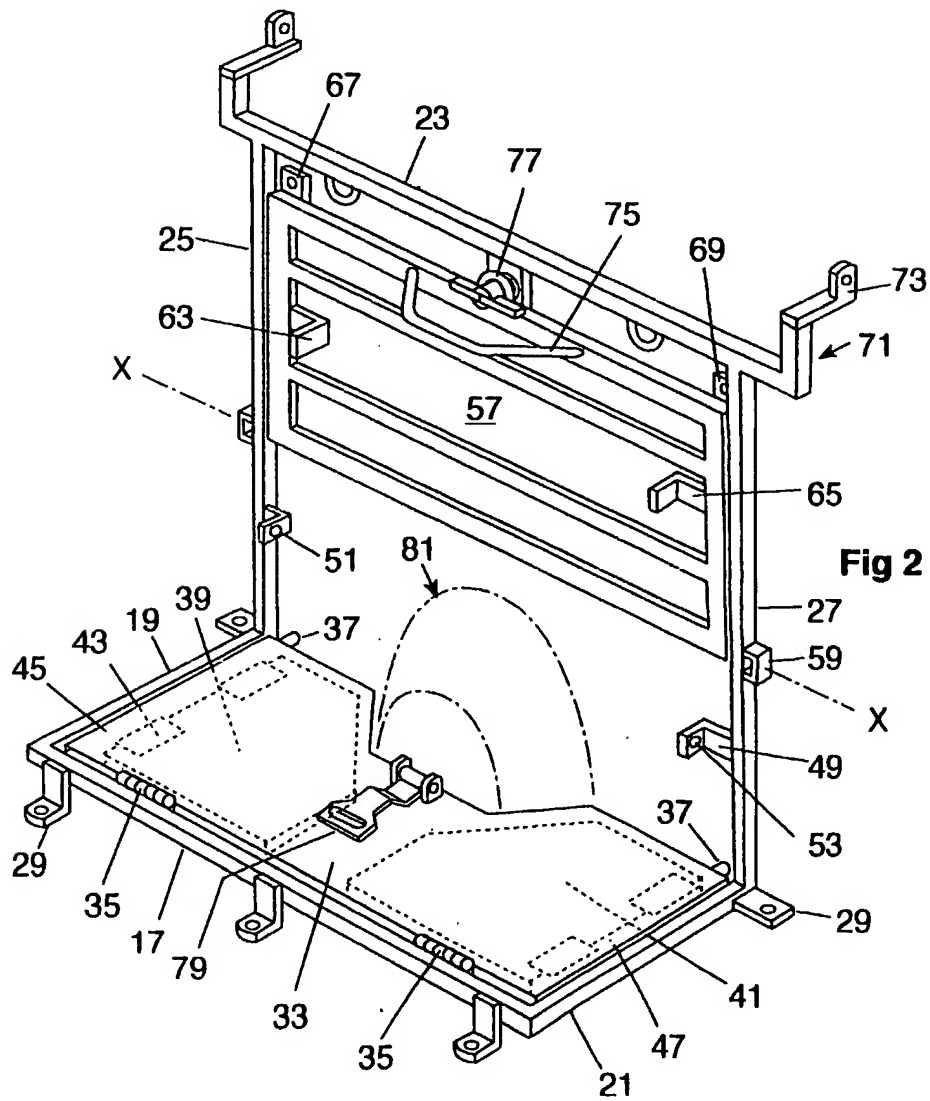
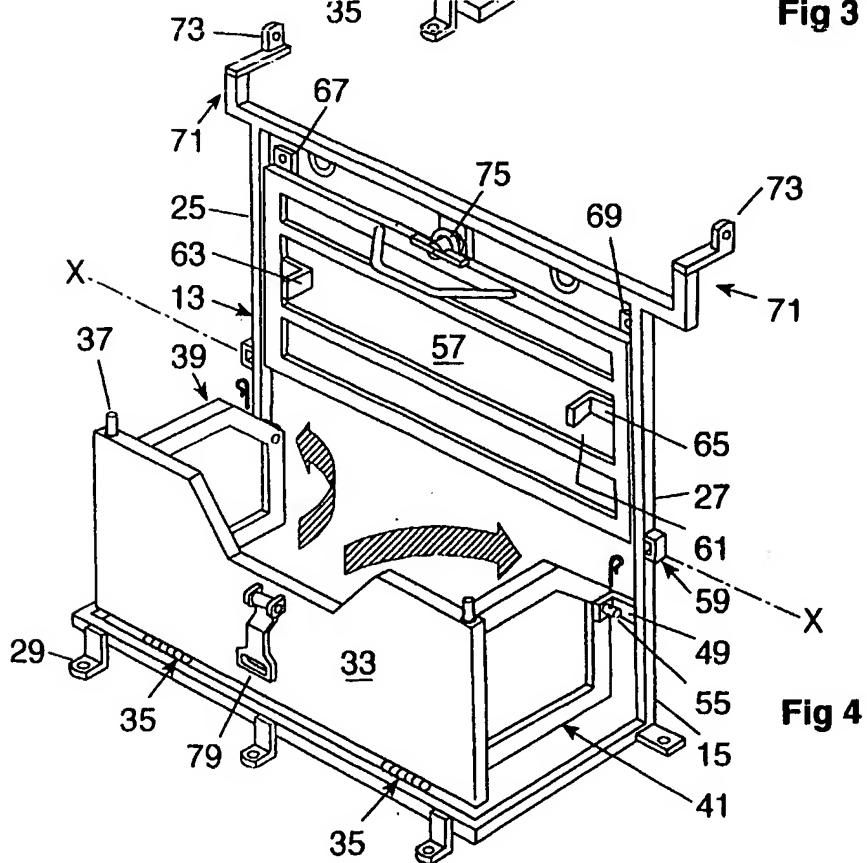
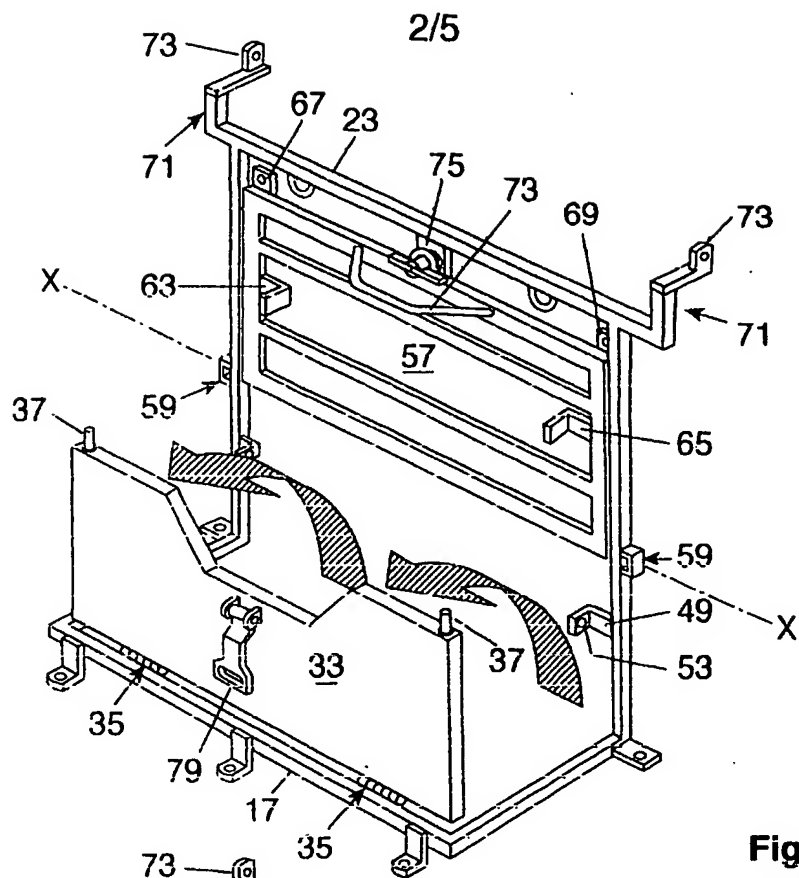
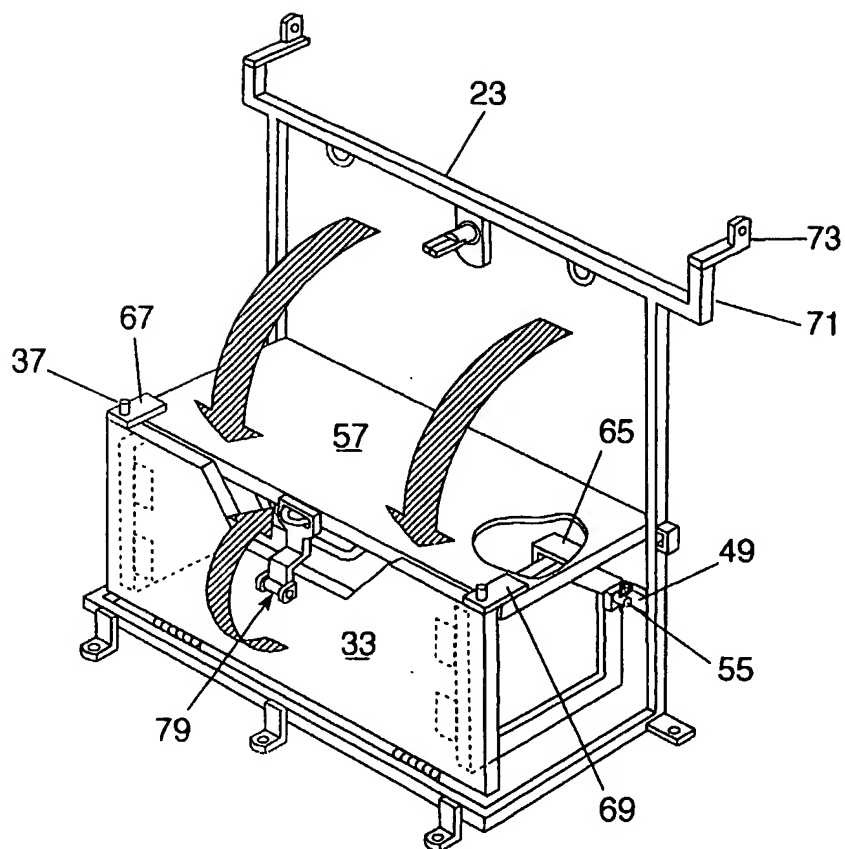


Fig 2



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**Fig 5**

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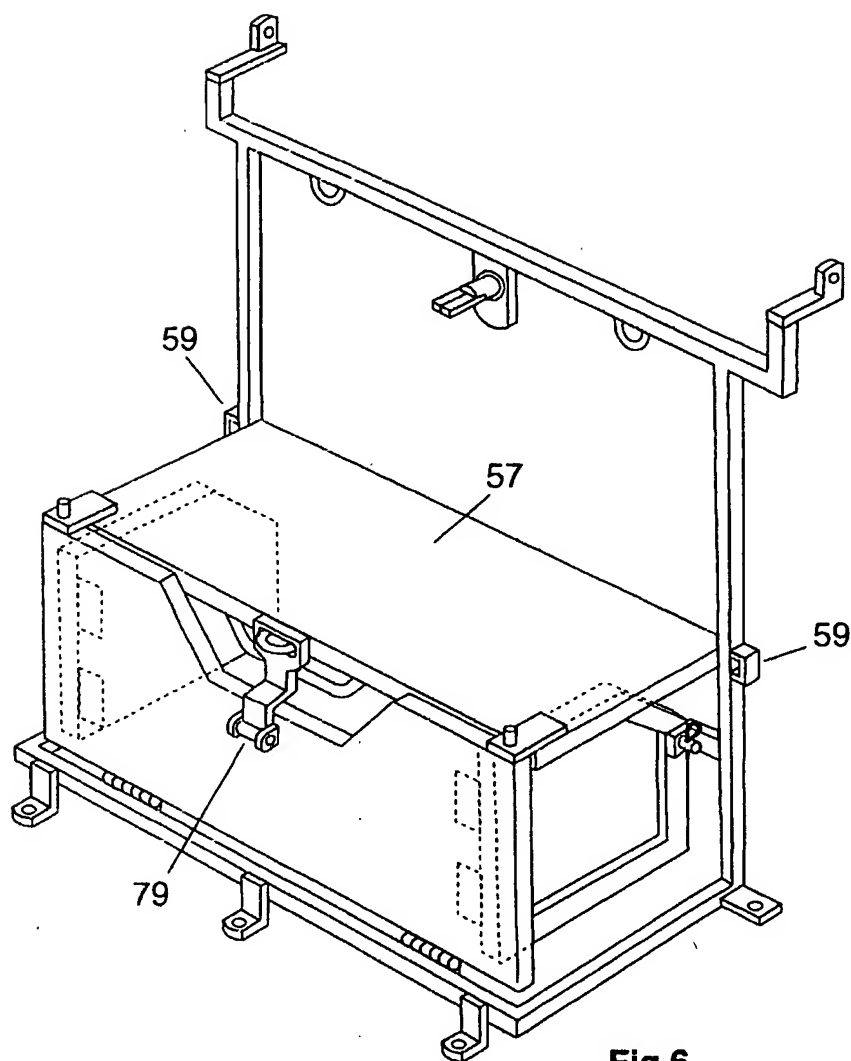


Fig 6

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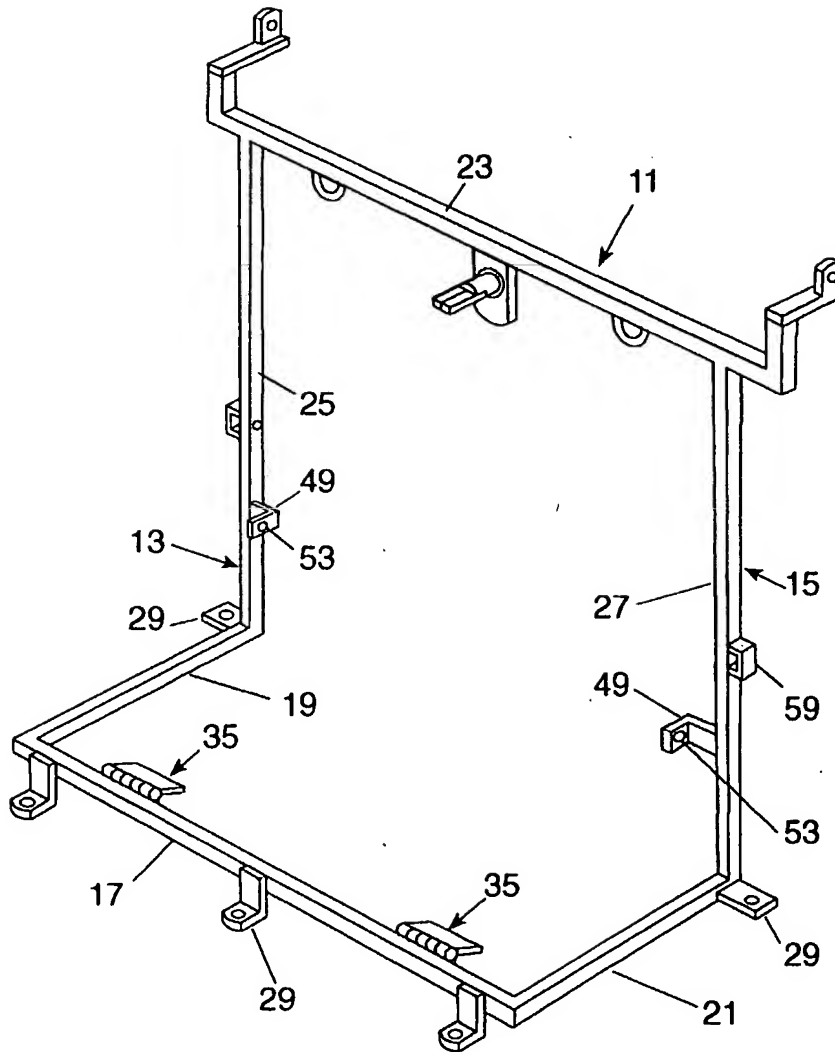


Fig 7

INTERNATIONAL SEARCH REPORT

PCT/GB 02/01475

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 B60R/02

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 B60R

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the International search (name of data base and, where practical, search terms used)

EPO-Internal, PAJ, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DE 43 40 675 A (BAYERISCHE MOTOREN WERKE AG) 1 June 1995 (1995-06-01) column 2, line 28 -column 3, line 49; figures 1,3 ---	1,6
X	EP 0 864 466 A (PRINCE CORP) 16 September 1998 (1998-09-16) column 3, line 51 -column 4, line 51; figures 1,4 ---	1,6
A	GB 2 194 760 A (MCCAIN ANDREW HOWARD) 16 March 1988 (1988-03-16) column 1, line 6 - line 51; figure 3 -----	3



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

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P document published prior to the international filing date but later than the priority date claimed

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Date of the actual completion of the international search

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INTERNATIONAL SEARCH REPORT

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